The Cardinal Nutrition Education Project

An Honors Thesis (HONR 499)

by

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Abstract

An old adage in the field of nutrition tells us that food is one of the last habits that people want to change in their day-to-day lives. The original rationale of The Cardinal Nutrition Education Program proposed that education through digital mediums has an effect on our relationships with food. Look to the internet's role in creating awareness and, at times, hysteria in regards to food issues. These topics include GMOs, hormones, pesticides, supplements, preservatives, etc. The list continues. The hope was that Facebook users would be interested in reading academically supported research to clarify issues of health and diet. The posts, made daily, on the Cardinal Nutrition Education Program Facebook Page contain hyperlinks to a separate Blogger. The URL from the blog attached to Google Analytics tracks user interaction with the program, gauges success, and gives insights into how to better run an online nutrition education program.

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Process Analysis Statement

Proper nutrition is of primary importance in treating and preventing metabolic syndromes such as hypercholesterolemia, hyperlipidemia, high blood pressure, and obesity. With heart disease as the number one killer in the United States, what circumstances need to change to prevent these conditions in those who can?

Education sits at the forefront of these medical conditions. Dietitians teach in hospitals, diabetes clinics, community nutrition settings, and recently the internet. Research shows that 55% to 67% of adults in the U. S. use the internet to search for health and wellness information.[3-5]

Luckily, dietitians, and public health academics saw social media as a tool to disseminate truthful and beneficial nutrition information. Researchers found that participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) saw more benefit in online education compared to traditional programs.[13] This fostered a need for best practice guidelines and important considerations that are now established for social network education.[12,19] Within these guidelines, a brief explanation of different tracking tools, such as Facebook Insights, Google Analytics, and Pinterest Insights is given. It does not specify many nuances of these tools. Google Analytics specifically lacked a detailed description.

This information was the basis of formation for the project. I attempted to follow the best practice guidelines as much possible.

> "An effective program might initiate a needs assessment, select social media sites, create a plan, integrate a social media team, and regularly track and use social media measurement data (i.e. Facebook Insights, Google Analytics). The authors of the Food Hero Study recommend that any social media approach to nutrition education should maintain a format that is relevant to the target audience. Tracking user interaction with measurement data may help define what is relevant to the target audience." [12]

The authors did not complete a needs assessment, but gave interest to affinity categories and demographic data. In theory, if needs assessments are in a contained sample size with the groups' individual sexes recorded, one could ascertain how their interest (affinity categories) reflected their interaction with the tracked page in relation to the other things that they view.

This is the primary difference to The Cardinal Nutrition Education Program in that we attempted to spread it to many students. I decided that Google Analytics would be the primary tracking method, in an attempt to fill a gap in the research.

After creating the blogger account, I linked it with Google Analytics. The details of this set up are in this projects manuscript. I had no prior experience using Google Analytics. The learning curve forced me to conceptualize what kind of data I wanted from the page users. The final data set from the manuscript was from demographic and interest categories. Analytics is not exact, but it showed me general trends of age, sex, and interests from the users.

With the final format solidified, I began picking topics that I, with the help of an advisor, believed important to nutrition and health. The topics ventured into realms outside of human physiology and anatomy. I hoped to help my readers understand the broader health situation in the United States and factors that affect it.

I pulled my citations from Ball State Library databases, free online academic journals (ex. National Center for Biotechnological Information), and a few worthy websites. After my advisor (a Registered Dietitian) read the piece and decided that the information was accurate and concise, I posted the piece within the blogger account. I placed the link from that blog posting onto a Facebook Page called The Cardinal Nutrition Education Program. Facebook automatically reformats link posts into an attractive style. At this point, I found a picture online of a picture that related to the post, I typed a description of my writing into the Facebook post, and clicked post.

This format and set up worked to specifically advertise the blog using the Facebook Page. This worked wonders for tracking the user interaction via Analytics. Facebook Insights is substantial tracking tool but does not provide as many options as Google Analytics. Insights does not save the data as Analytics does.

A substantial unforeseen benefit arose from this set up. If a person browses through the Cardinal Nutrition Education Facebook page, they will see scant interaction. Only a few posts received likes, shares, and comments. Considering the amount of work going into the project, it would seem a waste. I know that this is not the case, however. According the Analytics data, I had a substantial base of users that spent a couple of minutes on my page consistently. Likes, shares, and comments are a common indicator of popularity. My posts received little if any of these, but this project is hardly common.

Using my background knowledge in physiology and biochemistry I was able to piece together information from sometimes, many different sources, to paint a picture for my reader in lay speak. My knowledge of the body and my ability to learn of it drastically improved. I formed models of physiological systems for myself. My ability to discuss and transmit notions of health and physiology be it over spoken or written word also improved.

Introduction

Ahlqvist, et al. defined social media as "a means of interactions among people in which they create, share, and exchange information and ideas in virtual communities and networks."[1] The utilization of social media outlets, such as Facebook, has the potential to provide a large number of individuals with nutrition information. The nation's staggering usage of the internet and social media supports this theory. As of 2012, 66% of adult internet users have and use a social media site, like Facebook, and 48% use it in their daily lives, making social media the third most common online activity[2]. Reportedly, 86% of people from the ages of 18-29 use social media.[2] Furthermore, social media giants are free. For this, and arguably, many other reasons, shrinking gaps of usage based on demographics (age, education, and household income) are now apparent. Additionally, 55% to 67% of adults in the U. S. use the internet to search for health and wellness information. Half of these searches are in consideration of someone else.[3-5]

Previous literature illustrates that credible sources in the field of nutrition education have only recently taken interest in studying the opportunities presented by social media. A study by Lohse examined the effectiveness of Facebook to recruit low-income women. Lohse required a specific age and geographic location to participate in an online nutrition education program.[6] She acknowledged the use of social media as a way to implement interactive health education via "likes," beyond typical class structures, as millions of Americans have Facebook.[6] Despite that the internet is considered the most convenient method to access health information, [7] Lohse notes that "as online nutrition education opportunities emerge, recruitment strategies using social networks may facilitate the outcome and impact evaluations necessary to establish an evidence base for these programs."[6] Lohse demonstrated that Facebook is an effective strategy to recruit low-income participants to nutrition education impact assessment projects. Therefore, it is an important research tool for examining food security, eating competence demographic characteristics (including education level and BMI status),[8,9] associations between eating competence and food security,[10,11] and cost effectiveness.[12] People who have dietary restrictions sought out the information, as well.

The importance of this assertion comes to life as nutrition education via the internet shows promise. Researchers found that participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) saw more benefit in online education compared to traditional programs.[13] Healthcare professionals have taken notice, using social media sites for a host of services. These include improving delivery and availability of health care, communicating with peers, facilitating social support groups, and delivering educational programs. Inter-professional services include recruiting for services, training students, communication between other healthcare professionals (through workplaces, coalitions and organizations).[14-18] The public health professional community uses social media for comparable appropriations. These include electronic-based education, communication to the public, recruitment to programming, training students, tracking and analyzing data on the group or population of interest.

Lohse's study pointed out the need for future research to understand learner interaction with the social network site on a more intimate level. These aspects include navigation, program participation, and retention levels. This is all needed to maximize the effectiveness of using the social networking application in regards to nutrition education and research.

The Food Hero social media marketing campaign established what the authors deemed as "Best Practice Guidelines" to initiate and run a social networking site for nutrition education.[19] The authors note that amongst the horde of nutrition, fitness, and health pages floating around sites like Facebook, it is necessary to distinguish the "how" of the successful pages. The Food Hero study found a select list of Best Practice Guidelines to be most efficient in their study. An effective program might initiate a needs assessment, select social media sites, create a plan, integrate a social media team, and regularly track and use social media measurement data (i.e. Facebook Insights, Google Analytics). The authors of the Food Hero Study recommend that any social media approach to nutrition education should maintain a format that is relevant to the target audience. Tracking user interaction with measurement data may help define what is relevant to the target audience.

The EFNEP Study conducted by Leak, ET al.[12] implemented focus groups to assess the needs of Expanded Food and Nutrition Education Program (EFNEP) graduates for a social media platform to continue nutrition education. They found four main areas of interest. The first was page content. Focus groups reported that the page would be more attractive if recipes were included. Tips on how to shop and budget were of importance as well. Parents wanted advice on how to get their children involved in the selection and preparation of food. The focus groups described that they would like visually appealing page. It should be vibrant, have pictures, concise, well-written messages, with maintenance carried out by a select group of professionals, preferably an MD or RD. The rationale for this is that it creates trust for those using the page. The MD or RD should make daily updates that are realistic but enthusiastic. It was also determined that networking opportunities be within the page, as well. If there is an "ask the expert" section, the responses are to be in a timely manner. Conversation on the page should be encouraged, especially for those wanting to show positivity and successes. Overall, trust was one of the most important concepts discussed in the focus groups. There was an obvious desire for trustworthy and accurate information from credible sources. For this reason, it is important that each person who writes this information to have a bio section, describing themselves on a more personal basis.

The reviewed literature discussed thus far provides a solid platform for the beginnings of a successful nutrition education program utilizing social media. There is a large enough segment of the general public using social media for it to be a viable option for nutrition education. Furthermore, the Food Hero Study provided useful guidelines for successful implementation of nutrition education programming. Lastly, the EFNEP study provided useful ideas on how to appeal to the users of the page. The Food Hero study did provide mention of tracking tools like Facebook Insights, Google Analytics, and Pinterest Insights. However, as it was not the focus of that study, these tools lacked extensive explanation. The ability to track user involvement needs explored for the benefit of this field of study. The objective in this exploratory project was evaluate the utilization of Facebook and a blog to disseminate credible nutrition information and to gather enough data from user interactions to explore aspects of Facebook Insights and Google Analytics that have not previously been reported in this area of work.

Methods

Using best practices recommended by previous research, a Facebook and blog (using Blogger) created, named the Cardinal Nutrition Education Program. Both the Facebook and blog pages contained background and educational information about the writers/managers of the posts. A senior undergraduate dietetics student at a Midwestern university wrote the blog posts. They were well-

researched using peer-reviewed journal articles, cited, and assessed for validity and trustworthiness by a professor of an accredited dietetics program, who was also a registered dietitian. The posts contain relevant, applicable health information, put into a relatable writing style. The intended audience was anyone using the internet to find nutrition information. The chosen health promotion topics were primarily of nutrition, supplements, influencing factors, and health trends. The Facebook page was circulated by the writers (student and faculty member) sharing the page from their personal Facebook accounts. Because this project was an evaluation of a nutrition education program, the university Institutional Review Board deemed it "Not Human Subject Research."

Each day in the month of March (National Nutrition Month), one post was put into the blog and hyperlinked into the Facebook page. The hyperlinked posts give corresponding, yet brief descriptions. A picture deemed appropriate by the student and faculty member enhanced the visual appeal and credibility.

Essentially, the Cardinal Nutrition Education Facebook Page highlighted the Blogger page. It is important to note that the Blogger page was also accessible from the general web. However, researchers were able to differentiate between the percentages of users that found the blog via Facebook or the web. Facebook Insights, Blogger, and Google Analytics assessed Facebook user interaction with the blog.

The researchers noticed the breadth of possibilities within Google Analytics is driven by the settings and formatting. There are many options and individuals will have to decide which are fitting for their goals and programs. The format of this project, while inclusive of its goals, had a relatively simple setup compared to the range of options that Google Analytics provides.

The first step of setup involved creating a blogger account and Google account. Google accounts come free with Analytics. The project's account, named Honors Thesis, exists within the Analytics Admin. The Property contains a subfolder named Cardinal Nutrition Education Project. A subfolder called All Website Data appears automatically.

The amount of notable settings changes within these three areas was not excessive, but were important. Writers can enter their respective Google email addresses within the Account Honors Thesis, under User Management to gain access to the Analytics Account. Two filters were also set: Exclude Myself and Force Lowercase URLs. This ensures that Google Analytics does not add unnecessary data from administrative management within the Blogger site. It also assures that Google Analytics includes upper case URL entry in the data set.

Settings within Property Admin held the most significant changes. Property Settings adds the URL "cardinalnutrition.blogspot.com" to the prefix http://. The Industry Category defined People and Society in this project. The Enable Demographics and Interest Reports is on. The emails used in User Management Access are also within User Management. In this instance, however, their property permissions were set to Manage Users, Edit, Collaborate, Read & Analyze.

An essential component of the project lies directly within the Tracking Info tab, under Tracking ID in Analytics. This ID to link the Blogger and Google Analytics. This code was placed within the Other tab within Blogger Settings. Analytics Web Property ID is the spot to enter the ID

The Data Collection tab in Tracking Info within Analytics was the next area of interest. Enabling the Advertising Reporting Features displays Audience Demographics and Interests data. Within the scope of the project, this feature proved to be beneficial. It allowed an analysis of how differences in sex and ages viewed the project.

Below is a listing of titles in the order of their posting. The full blog is viewable at this link:http://cardinalnutrition.blogspot.com/2016/03/introduction-to-ball-state-nutrition.html

- Introduction to the Ball State Nutrition Education
- Potassium: Beyond the Banana
- Sugar We're Going Down (Into The Annals of Literature)
- Preventing Kidney Stones
- What Does it Mean to Be Obese and Healthy
- The Lie That The Supplement Industry Makes Millions of Dollars From
- Creatine, a wonderful supplement.
- Juicing Your Way to Health
- Playing violent video games or the Saturday morning cartoons - What's worse for your child?
- Meatless Mondays
- Efficacy of Paleo
- Diverticulitis
- Quinoa superfood!
- Mighty Magnesium
- An Inflamed Nation
- Cha-Cha-Cha...Chia
- The Negative Calorie Miracle
- Altering body composition
- Something about "burning fat" that you probably didn't know
- Carbohydrate Utilization and Needs During High Intensity Exercise
- Soy Isoflavones and Colorectal Cancer
- A Shocking Picture of Health In the U.S.
- Get your iron, NOW!
- Prediabetes Covered by Medicare

- Cholesterol and Cancer
- Inflammation, Fats, and Exercise
- For more than just your bones
- The reviewed effects of fiber
- Arginine, Citrulline and NO
- GMOs and Allergic Sensitization
- Briefly on Nutrition Education and Awareness in the United States

Results

The overall number of blog site users who came from Facebook from March 1st to March 31st was 106. The most popular blog written was Potassium: Beyond the Banana on with 63 sessions on March 2nd. The least popular was GMOs and Allergic Sensitization posted on March 30th with 1 session that day. The average session duration on the blog site was 2:58 seconds. There were 488 unique blog page views. "Unique views can be understood as user sessions per page, with each session potentially representing multiple views of the page but a minimum of one view per session." [20] At the end of March, 194 people had liked the Cardinal Nutrition Education Program on Facebook. There was a negligible amount of sharing of the page and the posts. This was also true for likes of each post. Despite the lack of interaction on the Facebook page, it is clear that users were accessing the blog through Facebook from Google Analytics information.

Google Analytics was able to record 85.1% of blog site sessions relating to demographic categories (age and gender). This protects user anonymity. To quote from Analytics Help, "Thresholds are applied to prevent anyone viewing a report from inferring the demographics or interests of individual users. When a report contains *Age*, *Gender*, or *Interest Category* (as a primary or secondary dimension, or as part of an applied segment), a threshold may be applied and some data may be withheld from the report. For example, if there are fewer than *N* instances of *Gender=male* in a report, then data for the *male* dimension may be withheld."[21] Gender breakdown of sessions on the blog can be seen in Figure 1.

In total, the 18-24 age group category composed 71.8% of the sessions from our user base. This age group totaled 36 users. The 25-34 age group category consisted of 22 users and 28.2% of the sessions from our user base (Figure 2). It is important to note that Google Analytics can only discern the user trend. It tracks how the user's ID, or IDFA in the case of iOS users, has interacted with previous sites, i.e. a cookie trail.[22] Data implicates that users beyond 34 years old may have cookie trails that resemble what younger demographics are viewing in their time on Facebook and other sites.

Figure 1. The Number of Sessions between Females and Males Interacting with the Cardinal Nutrition Education Program Blog

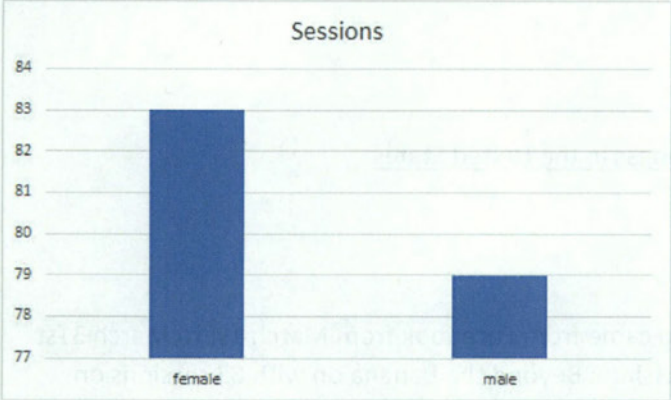
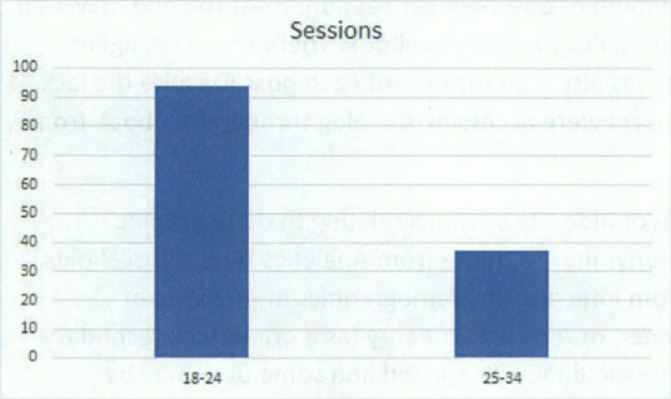
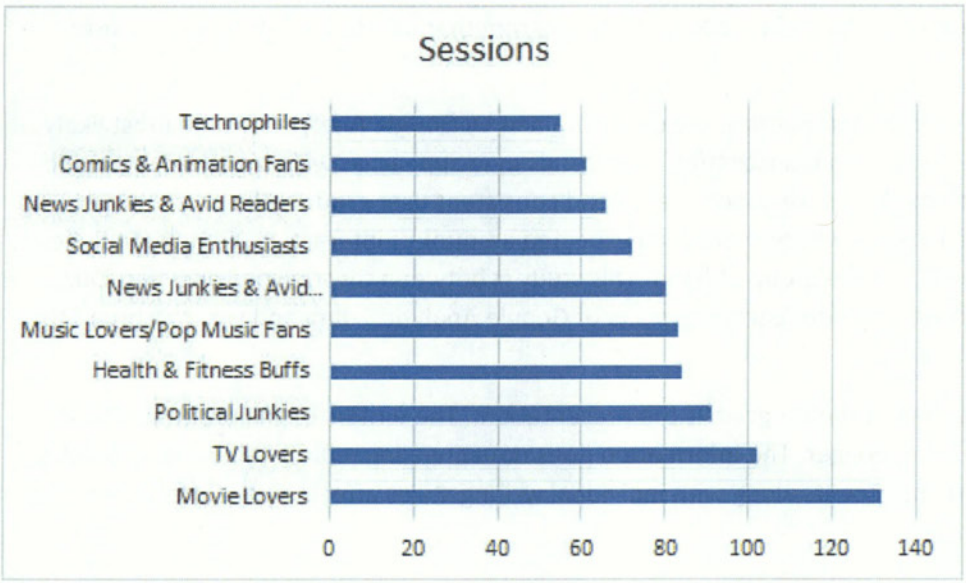


Figure 2. The Number of Sessions between Age Groups Interacting with the Cardinal Nutrition Education Program Blog



A useful tool provided by Google Analytics is the Interests Overview. This allows the program user to gain insight into the interests of the viewers. While this is not a direct cookie trail that Google Analytics gathers, it comes "from the third-party DoubleClick cookie (for web traffic) and from anonymous identifiers for mobile apps (i.e., Advertising ID for Android and IDFA for iOS)."[22] Figure 3 depicts popular affinity categories of blog users who came from the Facebook page.

Figure 3. Sessions of Popular Affinity Categories of Blog Users from Facebook



Discussion

This exploratory program was started with the intent to simply track the number of users, "Likes," "Shares," and comments to a nutrition education program utilizing Facebook, but through the use of Google Analytics, researchers were able to analyze how reactive a moderate size of individuals were to researched and well-written nutrition information in the aforementioned format. It was found that Google Analytics, specifically Affinity Categories and Demographics had the potential to analyze the people traversing through the content of any online program. On top of this, Google Analytics allows more basic but just as effective information. This includes bounce rates, returning vs new user data, time of day usage, session duration, and pages per session. This information is important in gauging the overall effectiveness of the program. There are also various ways of segmenting and grouping this information.

If there is a substantial user base, Google Analytics allows a general interest profile of those viewing the blog pages. There are multiple benefits of this. Our user base segments into multiple categories from the interest categories. Some notable examples include gender, mobile traffic, referral traffic, single session users, returning users. These segments allow an insight into what types of people are viewing the page. This may be to help orient advertising and content management.

Based on previous literature, the need for a more in depth discussion pertaining to the tracking of nutrition education programs over social media became apparent. The study by Lohse mentions the need for a tool like Google Analytics.[6] The Food Hero study briefly mentions Google Analytics as a tool but does not delve into the features that it provides.[19] This is the first study looking at how Google Analytics is used online nutrition education programs.

This program had a substantial user base. Google Analytics was able to gather enough data that certain aspects of the users were identifiable. However, certain statements about what the users were looking at, who they were, and what they look at elsewhere on the internet are not available. The

information gathered points us to certain aspects of the program that do not fully describe our user base.

In programs with a large sample size, the data obtained by Google Analytics would most likely "fill out" so to speak. If the program is successful, user trends may appear, as will strong demographic and affinity categories. In smaller, more concentrated and consistent user groups, like in an online education class over social media, where there is an expected amount of interaction, Google Analytics could hone in on the specifics of the group at hand. This study is between these two properties. Our sample was not large enough to fill out certain aspects of Google Analytics' data and was too broad to have a select group of users.

One possible downfall of the program is the presentation. The writers of the program do not have extensive design skills in Blogger. The information does not appealing to a certain reading level. It is difficult to gauge how these aspects along with individual writing styles affected user interaction with the Facebook page and blog.

Facebook Insights and Google Analytics provide strong tools for the future use of online nutrition education. The data acquired allows a view of the demographics, user flow, affinity categories, and other undoubtedly useful tools. Public health organizations with a social media presence may stand to benefit from Google Analytics. Many businesses use the same format utilized through this project (an outside page being hyperlinked into a specific Facebook page's post). Various businesses use Google Analytics businesses to track sales, user flow, and to target marketing strategies. Our findings relate to the earlier studies, [6, 12, 19] which found a need to keep page relevance, track interactions to assess problems, and to know what users are looking at elsewhere to investigate consumer trends over social media. Google Analytics may perfectly bridge this gap. With further research and skill using Google Analytics, it may help the field of nutrition education find and fit into the schematic of Facebook demand. Further research regarding social media use for nutrition education should relate Google Analytics and other tools to target specific audiences.

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